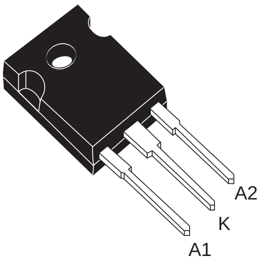
STTH30R03CW/CG

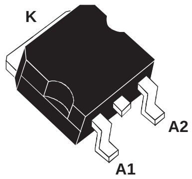
HIGH FREQUENCY SECONDARY RECTIFIER

MAJOR PRODUCT CHARACTERISTICS

$I_{F(AV)}$	**2 x 15 A**
V_{RRM}	**300 V**
I_{RM} (typ.)	**4.5A**
Tj (max)	**175 °C**
V_F (max)	**1.4 V**
trr (max)	**35 ns**



TO-247
STTH30R03CW



D^2PAK
STTH30R03CG

FEATURES AND BENEFITS

- Designed for high frequency applications.
- Hyperfast recovery competes with GaAs devices.
- Allows size decrease of snubbers and heatsinks.

DESCRIPTION

The TURBOSWITCH "R" is an ultra high performance diode.
This TURBOSWITCH family, which drastically cuts losses in associated MOSFET when run at high dI_F/dt, is suited for HF OFF-Line SMPS and DC/DC converters.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			300	V
$I_{F(RMS)}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current	Tc = 120°C δ = 0.5	Per diode Per device	15 30	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		120	A
T_{stg}	Storage temperature range			- 65 + 175	°C
Tj	Maximum operating junction temperature			+ 175	°C

THERMAL AND POWER DATA

Symbol	Parameter		Value	Unit
$R_{th\ (j\text{-}c)}$	Junction to case	Per diode	2.0	°C/W
		Total	1.2	
$R_{th\ (c)}$		Coupling	0.4	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	Tj = 25°C			20	µA
			Tj = 125°C		30	200	
V_F **	Forward voltage drop	I_F = 15 A	Tj = 25°C			1.9	V
			Tj = 125°C		1.1	1.4	

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 1 \times I_{F(AV)} + 0.026\ I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
trr	I_F = 0.5 A Irr = 0.25 A I_R = 1A	Tj = 25°C		20		ns
	I_F = 1 A dI_F/dt = - 50 A/µs V_R = 30V				35	
I_{RM}	V_R = 200 V I_F = 15A dI_F/dt = - 200A/µs	Tj = 125°C		4.5	6	A
S factor				0.4		

TURN-ON SWITCHING CHARACTERISTICS

Symbol	Tests conditions	Min.	Typ.	Max.	Unit
t_{fr}	Tj = 25°C I_F = 15A dI_F/dt = 100A/µs measured at $1.1 \times V_F max$			300	ns
V_{FP}	Tj = 25°C I_F = 15A dI_F/dt = 100A/µs			3.5	V

Fig. 1: Conduction losses versus average current

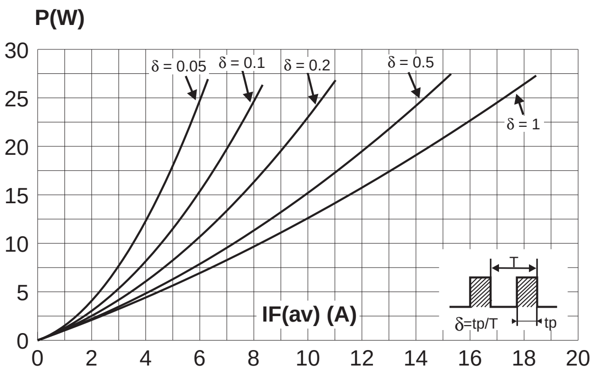


Fig. 2: Forward voltage drop versus forward current.

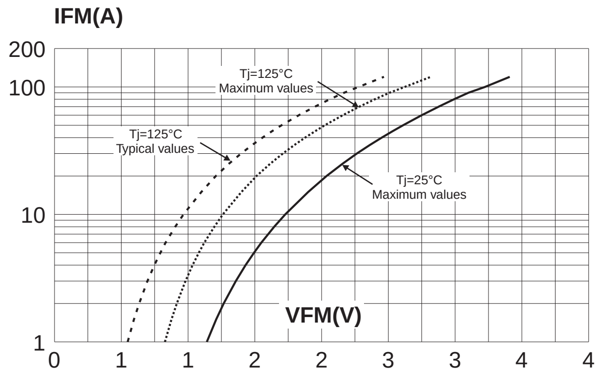


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

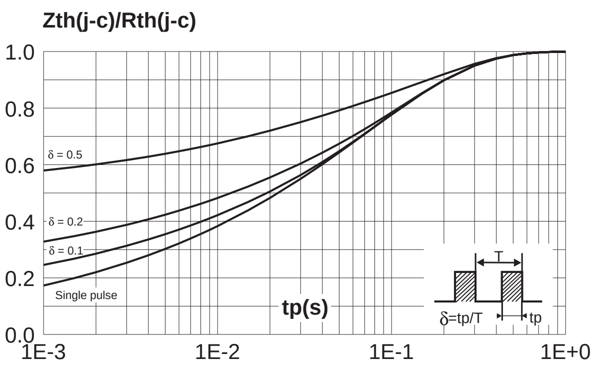


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

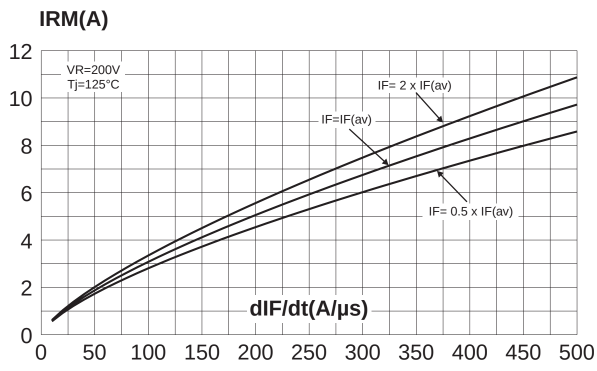


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

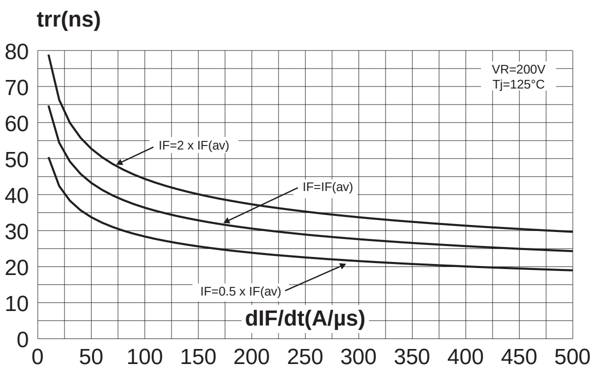


Fig. 6: Reverse recovery charges versus dIF/dt (90% confidence).

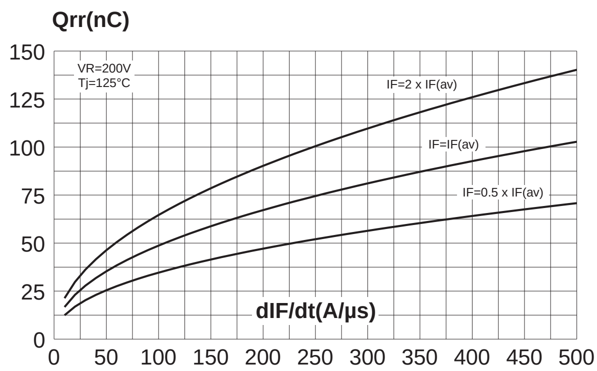


Fig. 7: Softness factor (tb/ta) versus dIF/dt (typical values).

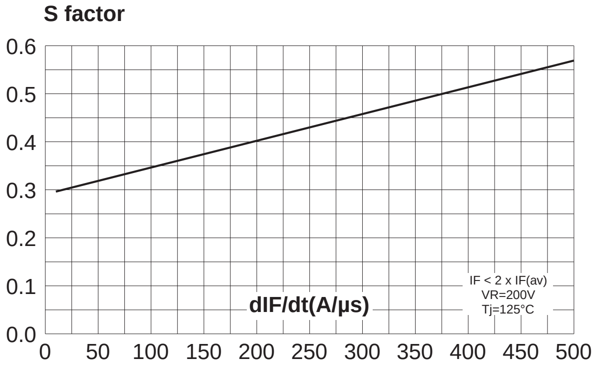


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: Tj=125°C).

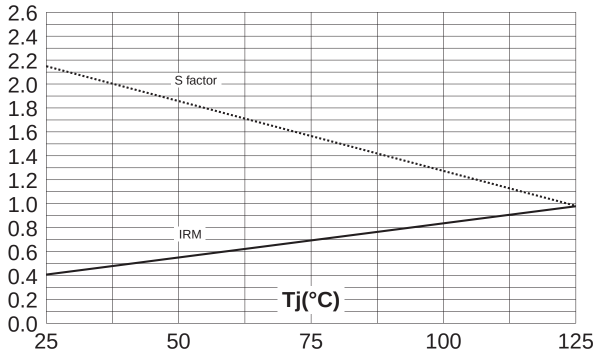


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

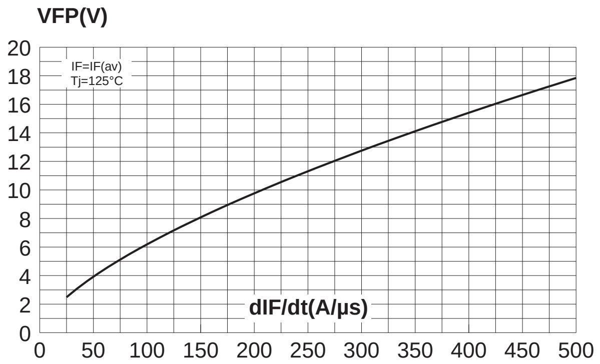
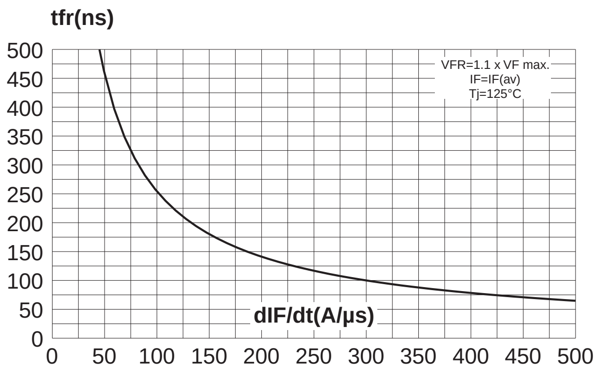
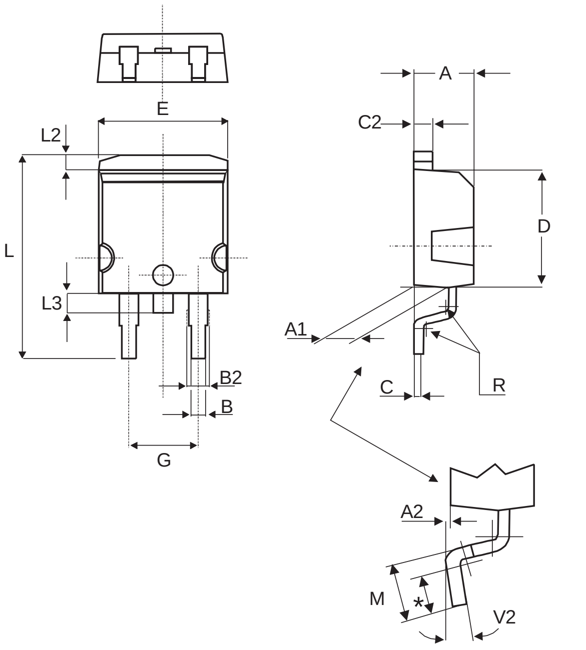


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).



PACKAGE MECHANICAL DATA

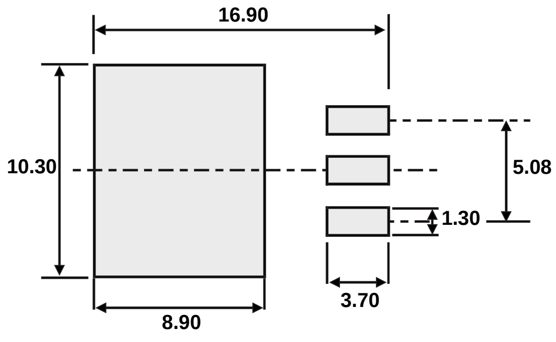
D²PAK



* FLAT ZONE NO LESS THAN 2mm

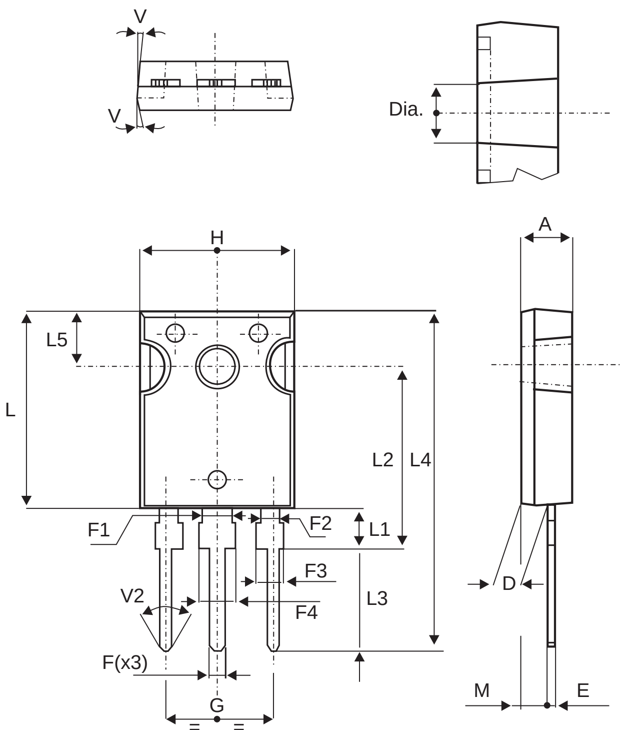
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

FOOTPRINT



PACKAGE MECHANICAL DATA

TO-247



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
D	2.20		2.60	0.086		0.102
E	0.40		0.80	0.015		0.031
F	1.00		1.40	0.039		0.055
F1		3.00			0.118	
F2		2.00			0.078	
F3	2.00		2.40	0.078		0.094
F4	3.00		3.40	0.118		0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
L3	14.20		14.80	0.559		0.582
L4		34.60			1.362	
L5		5.50			0.216	
M	2.00		3.00	0.078		0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55		3.65	0.139		0.143

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH30R03CW	STTH30R03CW	TO-247	4.36g	30	Tube
STTH30R03CG	STTH30R03CG	D^2PAK	1.48g	50	Tube
STTH30R03CG-TR	STTH30R03CG	D^2PAK	1.48g	1000	Tape & Reel

- Cooling method: by conduction (C)
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1 N.m.
- Epoxy meets UL 94,V0

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